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Factitious Methemoglobinemia

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We report the case of a 26 year-old female who was treated on numerous occasions for methemoglobinemia believed secondary to surreptitious abuse of dapsone as part of a factitious disorder. Am. J. Hematol. 62:196–197, 1999. © 1999 Wiley-Liss, Inc.

Key words: dapsone; methemoglobinemia; factitious disorder; Munchausen's syndrome

INTRODUCTION

A review of the literature reflects the various, often ingenious, methods used by patients suffering from factitious disorder to induce illness. The diagnosis of Munchausen's syndrome or "factitious disorder," defined as the voluntary production of signs and/or symptoms of illness with the goal of adopting the "sick role", can be difficult to establish [1,2]. We report on yet another "modus operandi" used to induce a life-threatening illness for no obvious reason other than to adopt this "sick role."

CASE REPORT

A 26-year-old female had a vague history of migratory arthralgias and skin and oral ulcerations. This patient's complaints of pain were treated by multiple physicians with darvocet, percocet, loratab, vicodin, and tylenol no. 3 at various times over a 2 and one-half-year period. A diagnosis of leukoclastic vasculitis was ultimately reached based upon a skin biopsy. All further diagnostic work-up was unrevealing. Patient was HIV negative. She was treated with dapsone 50 mg daily beginning May 5 1997; the skin lesions responded well, the medication was continued. By April 1998, the dose had been increased to 100 mg daily. The patient presented to her primary care physician on May 29 1998 complaining of pallor and fatigue. She was noted to be cyanotic with an oxygen saturation of 70% to 80%. Laboratory tests revealed hemoglobin of 10.2 g/dl, hematocrit of 32.3% and increased bilirubin and reticulocyte counts, as well as a methemoglobin level of 23.2% by co-oximetry. A diagnosis of methemoglobinemia with hemolytic anemia, believed secondary to dapsone use, was made and the patient was appropriately treated. At discharge from the hospital 2 days later, the patient was instructed to discontinue the dapsone and all sulfa drugs. The patient presented to the Hematology Clinic 10 days later, on June 9, 1998, again cyanotic and complaining of fatigue. She was readmitted with a methemoglobin level of 17% and hemolytic anemia. The patient's list of home medications obtained at admission did not include dapsone and she specifically denied its use; however, a bottle of the medication was found in the patient's room and promptly removed. She was again instructed to discontinue dapsone. The fire department was sent to patient's home to inspect for gas leaks or other environmental causes for her methemoglobinemia; however, no causes were discovered. Her family was notably unaffected. Thereafter, she presented to emergency rooms on June 28 1998 (methemoglobin level of 22.9%) and July 2, 1998 (methemoglobin level of 20.5%). Patient continued to follow-up with the Hematology Clinic with each visit including discussions regarding use of dapsone, and exploring the possibility of having confused medications and taken dapsone in error. She persisted in denial of the drug's use. Now, after 2 months on continuous home oxygen secondary to low oxygen saturation, a dapsone level was requested. The patient became agitated stating she understood that "it takes a long time to get out of your body." On July 23 1998 a dapsone level of 12 μg/ml

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was reported. A second level was drawn on August 4 1998 and reported as 8.1 μg/ml. All known care providers were again contacted to the dapsone. Discussions regarding its use continued each visit as did the denials of dapsone use. The patient shunned compliments of how well she looked at some visits (i.e., not cyanotic), stating "no I don't, just wait, I'll turn blue again in a few minutes." Efforts to wean the oxygen were met with resistance. The patient was last seen on August 20 1998, at which time she requested referral to another facility.

DISCUSSION

Many drugs can cause methemoglobinemia [3]. Although methemoglobin is produced in normal erythrocytes, reduction pathways keep the levels below 1% [3]. Dapsone causes oxidation of iron from the ferrous to the ferric state resulting in methemoglobin production, which reduces the oxygen carrying capacity, and shifts the oxyhemoglobin dissociation curve to the left, preventing the release of oxygen to the tissues [4]. The drug is known to experience enterohepatic metabolism involving acetylation. Although acetylation status varies among individuals and populations it has been shown to have no effect on the elimination half-life of dapsone or its metabolites [4,6,7]. The average half-life is listed by the manufacturer as 28 hr, but the literature reports variations from 10 to 80 hr [4].

Our patient maintained methemoglobin levels between 17% and 23% over the 2 month period after her professed discontinuance of the dapsone with no other medication or environmental explanation to account for these findings. Dapsone levels at the end of the 2 months were equivalent to those expected with use of 200 mg or more of the drug each day. Of the 50 cases of dapsone poisonings from 1950 to 1993 reported by Tracqui et al. [5], few reported actual dapsone levels. The longest time interval between two levels on the same patient (2-year-old female, dose unclear) was 12 days, by which time the level had greatly decreased. We have found no evidence to support the possibility of a dapsone blood level 2 months after last ingestion.

This patient submitted to two hospitalizations, two emergency room visits, numerous treatments with methelene blue, continuous home oxygen therapy and several follow-up visits during this time. Although there have been reported cases of apparently intentional overdoses of dapsone [4–8], to the best of our knowledge this is the only reported case of dapsone being used chronically and surreptitiously as part of a suspected factitious disorder. As dapsone finds increasing acceptance as pneumocystis carinii pneumonia prophylaxis and in the treatment of skin and inflammatory diseases, its misuse to intentionally create life-threatening disease should be kept in mind by physicians treating methemoglobinemia.

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